

LISTING OF THE CLAIMS

1. (Previously presented) Sample device suited to be inserted inside an external tube with a radius r_{\max} , comprising

- a turntable with a substantially circular plate having a radius r_{table} ,
- a rotator for rotating said turntable around two substantially orthogonal axes,
- two substantially coaxial tubes including an inner tube and an outer tube, the turntable being supported by the outer tube, and
- two meshing gears, the first gear being connected to the inner tube and the second gear being connected to the turntable, the first gear having a radius r_{gear1} , the second gear having a radius r_{gear2} and the inner tube having a radius $r_{\text{inner tube}}$ such that

$$r_{\text{table}} \leq r_{\max} - d \sqrt{1 + \frac{1}{n^2}},$$

with d being the gear thickness and n being the gear transmission ratio.

2. (Previously presented) Sample device according to claim 1, further comprising at least one first cable guide having a first end connected to the turntable and the second end connected to a cable support.

3. (Previously presented) Sample device according to claim 2, wherein the cable support is guided by the outer tube.

4. (Previously presented) Sample device suited to be inserted inside an external tube with a radius r_{\max} , comprising

- a turntable with a substantially circular plate having a radius r_{table} ,
- a rotator for rotating said turntable around two substantially orthogonal axes,

at least one supporting means for supporting the turntable, and
at least one first cable guide having a first end connected to the turntable and the second end connected to a cable support, said cable support being connected to at least one first driving unit.

5. (Previously presented) Sample device according to claim 4, wherein the supporting means comprises an outer tube.

6. (Previously presented) Sample device according to claim 5, further comprising an inner tube that is coaxially arranged within the outer tube, with at least one gear being arranged between the inner and the outer tube.

7. (Previously presented) Sample device according to claim 6, further comprising two meshing gears, the first gear being connected to the inner tube and the second gear being connected to the turntable, the first gear having a radius r_{gear1} , the second gear having a radius r_{gear2} and the inner tube having a radius $r_{\text{inner tube}}$ such that $r_{\text{table}} \leq r_{\text{max}} - d \sqrt{1 + \frac{1}{n^2}}$, with d being the gear thickness and n being the gear transmission ratio.

8. (Previously presented) Sample device according to claim 4, wherein the cable support is guided by the supporting means.

9. (Previously presented) Sample device according to claim 1 or 7, wherein the gear thickness d is the thickness of the first or second gear and corresponds to the thickness of the inner tube.

10. (Previously presented) Sample device according to claim 1 or 7, wherein the gear transmission ratio n corresponds to $r_{\text{inner tube}} / r_{\text{gear}}$, with $r_{\text{gear}} = r_{\text{gear1}}$ or r_{gear2} .

11. (Previously presented) Sample device according to claim 2 or 4, wherein the first cable guide comprises at least one first bellow and/or spring between the first and second ends, and wherein the first end is arranged substantially perpendicular to the second end.

12. (Previously presented) Sample device according to claim 11, wherein the first bellow and/or spring is guided by a support connected with the outer tube.

13. (Previously presented) Sample device according to claim 2 or 4, wherein the cable support is provided with at least one external second bellow and/or spring.

14. (Previously presented) Sample device according to claim 1 or 6, wherein the inner tube and/or the outer tube is/are connected to at least one second driving unit.

15. (Previously presented) Sample device according to claim 2 or 6, wherein the rotator comprises the inner tube, the outer tube and/or the cable guide connected to at least one driving unit.

16. (Previously presented) Sample device according to claim 4, wherein the driving unit comprises at least one stepper engine and/or at least one worm wheel and/or at least one gear.

17. (Previously presented) Sample device according to claim 1 or 5, wherein the outer tube is provided with at least one axial extension for supporting the turntable.

18. (Previously presented) Sample device according to claim 17, wherein the extension is provided with at least one recess for carrying at least one first bearing.

19. (Previously presented) Sample device according to claim 17, wherein the outer tube is provided with two opposite extensions for carrying at least two rotation pins.

20. (Previously presented) Sample device according to claim 1 or 6, further comprising a second bearing between the inner tube and the outer tube.

21. (Previously presented) Sample device according to claim 1 or 7, wherein the first and second gears are formed as tooth or roll gears.

22. (Previously presented) Sample device according to claim 1 or 7, wherein the first gear is machined on or mounted on the inner tube.

23. (Previously presented) Sample device according claim 1 or 6, wherein the inner tube is made from carbon fiber and/or provided with chrome plated teeth.

24. (Previously presented) Sample device according to claim 1 or 7, wherein the first and/or second gear is/are made of acetal.

25. (Previously presented) Sample device according to claim 13, wherein the first and/or second bellow is/are made out of rubber.

26. (Previously presented) Sample device according to claim 1 or 5, further comprising at least one thermal isolation layer between the external tube and the outer tube, the thermal isolation layer being evacuated.

27. (Previously presented) Sample device according to claim 1 or 6, further comprising means for blowing conditioned air into the external tube entering into the inner or outer tube and exiting the outer or inner tube.

28. (Previously presented) Sample device according to claim 14, further comprising a control unit connected to the first and/or second driving unit.

29. (Previously presented) Sample device according to claim 28, further comprising at least one test object, at least one sample, at least one sensor, at least one mirror, at least one camera, at least one tool and/or at least one electronic device is/are detachably attached to at least one side of the substantially circular plate and/or connected with the control unit.

30. (Previously presented) Sample device according to claim 28, wherein the control unit is arranged remote from the turntable, and at least one cable guided at least partially within the first cable guide is provided between the control unit and the turntable.

31. (Previously presented) Sample device according to claim 2 or 4, further comprising at least one second cable guide connected to the second end of the first cable guide, the second cable guide being substantially flat and/or flexible.

32. (Previously presented) Sample device according to claim 29, wherein the sensor comprises at least one coil and/or at least one magnetic sensor for providing a magnetic calibration device.

33. (Previously presented) Sample device according to claim 29, further comprising a source for emitting electromagnetic radiation comprising a laser and/or a visible light source.

34. (Previously presented) Sample device according to claim 33, wherein the radiation is guided to the mirror and/or camera within the inner tube via at least one glass and/or fiber-optic light guide or waveguide.

35. (Previously presented) Sample device according to claim 1 or 6, wherein an amount of turns of the inner tube differs from an amount of turns of the outer tube by one turn within one measuring or calibration cycle.

36. (Previously presented) Sample device according to claim 2, wherein the cable support is connected to at least one synchronizing means.

37. (Previously presented) Sample device according to claim 2, wherein the cable support is connected to at least one first driving unit.

38. (Previously presented) Sample device according to claim 37, wherein the driving unit comprises at least one stepper engine and/or at least one worm wheel and/or at least one gear.

39. (Previously presented) Sample device according to claim 4, wherein the cable support is connected to at least one synchronizing means.

40. (Previously presented) Sample device according to claim 10, wherein $r_{\text{gear1}} = r_{\text{gear2}}$
or $r_{\text{gear1}} = r_{\text{inner tube}}$.

41. (Previously presented) Sample device according to claim 17, wherein the cable guide is mounted within at least one first bearing.

42. (Previously presented) Sample device according to claim 17, wherein a rotation pin connected to the substantially circular plate is mounted within at least one first bearing.

43. (Previously presented) Sample device according to claim 1 or 7, wherein the first and second gears are formed as straight and/or conical gears.

44. (Previously presented) Sample device according to claim 1 or 7, wherein the second gear is machined on or mounted on the turntable, in particular a support extending substantially perpendicular to the plate and/or substantially coaxially to at least one rotation pin.

45. (Previously presented) Sample device according claim 1 or 6, wherein the turntable is made from carbon fiber and/or provided with chrome plated teeth.

46. (Previously presented) Sample device according to claim 13, wherein the first and/or second spring is/are made out of non magnetic metal or plastic.